

INFECTION CONTROL INFORMATION

May 2004



PRODUCT EVALUATIONS

The following product evaluations have been recently posted on the DIS Web site (www.brooks.af.mil/dis/productevaluations.htm):

- VioNexus™ No Rinse Spray Antiseptic Handwash (Kerr Metrex) (5/04)
- 1SHOT Safety Syringe (4/04)
- SaniTyze Waterless Moisturizing Antimicrobial Gel (2/04)

NEW INFECTION CONTROL PRODUCTS

New and innovative products are marketed each month and DIS is unable to evaluate all of them. Because DIS has not had the opportunity to evaluate these products, **we cannot confirm manufacturers' claims** about them. If you would like additional information about the products or are interested in evaluating them please visit <http://www.brooks.af.mil/dis/newproducts.htm> or the manufacturer's Web site for more information on the following products.

- **Pro•Portion Tartar and Stain Remover** (Septodont, www.septodontinc.com)
- **Virtual Keyboard** (iBIZ Technology Corporation, www.ibizpda.com)
- **Peridex chlorhexidine gluconate 0.12% oral rinse in half-gallon pumps** (OMNII Oral Pharmaceuticals, www.omniipharma.com)
- **EmPower® Foam™** (Kerr TotalCare, www.KerrTotalCare.com)
- **Mint-A-Kleen** (Anodia Systems, www.mintakleen.com)



FREQUENTLY ASKED QUESTIONS

Cleaning Dental Anesthetic Cartridges Before Surgical Procedures (5/04)

Question: Can local anesthetic cartridges be heat sterilized before use during a surgical procedure?

Answer: The contents of a local anesthetic cartridge are sterile; the exterior surface of the cartridge is not. Therefore, anesthetic cartridges should be stored in a manner that prevents cross contamination and handled aseptically before any dental procedure. Although one study indicated that heat sterilizing the cartridges did not affect the cartridge contents¹, manufacturers do not recommend heat sterilizing anesthetic cartridges because the high temperatures can affect the cartridge contents (e.g., breakdown of the vasoconstrictor) and can cause cartridge failure (e.g., extruded plunger). While it is not recommended to soak the cartridges in a disinfectant solution prior to use, most manufacturers agree that it is acceptable to use an alcohol wipe to clean the anesthetic cartridge prior to placing the cartridge on the surgical tray. If contamination is suspected, the cartridge should be discarded immediately.



Reference

1. Kelly JR, Dalm GW. Stability of epinephrine in dental anesthetic solutions: implications for autoclave sterilization and elevated temperature storage. *Mil Med* 1985;150:112–4.



FROM THE LITERATURE

Silicosis and Dental Laboratory Technicians

CDC. Silicosis is dental laboratory technicians—five states, 1994–2000. *MMWR* 2004;53:195–197.

Silicosis is a debilitating, sometimes fatal, yet preventable occupational lung disease caused by inhaling respirable crystalline silica dust. Although crystalline silica exposure and silicosis have been associated historically with work in mining, quarrying, sandblasting, masonry, founding, and ceramics, certain materials and processes used in dental laboratories also place technicians at risk for silicosis.¹⁻³ During 1994–2000, occupational disease surveillance programs in five states identified nine confirmed cases of silicosis among persons who worked in dental laboratories. This Centers for Disease Control and Prevention report describes three of the cases and emphasizes the need for employers of dental laboratory technicians to ensure appropriate control of worker exposure to crystalline silica. The findings in this report suggest that dental laboratory technicians might be at risk for silicosis as a result of uncontrolled exposure to airborne crystalline silica dust. For the patients described in this report, the only identified source of crystalline silica exposure was their work as dental technicians. Exposure to respirable crystalline silica in dental laboratories can occur during procedures that generate airborne dust (e.g., mixing powders, removing castings from molds, grinding and polishing castings and porcelain, and using silica sand for abrasive blasting). The proportion of crystalline silica in mold and porcelain materials, by weight, can range up to 70%. A study of dental technicians in South Korea⁴ that described materials and processes similar to those used in the United States found exposures during polishing operations that exceeded the NIOSH recommended exposure limit of 0.05 mg/m³.⁵ The authors do acknowledge several limitations of this report. Data for some variables (e.g., month or year of diagnosis and job history) were not available for all cases, the risk for exposure to crystalline silica could not be quantified because data on exposure levels among dental laboratory technicians are limited, and silicosis case determination is not complete.

DIS Comment:

The Occupational Safety and Health Administration (OSHA) requires employers to identify occupational health hazards and control them by instituting engineering and work-practice controls, issuing personal protective equipment (PPE), and ensuring that PPE is working and used properly. Dental technicians should be trained in the hazards of crystalline silica exposure and the methods to control exposure.

Exposure-control methods for crystalline silica in dental laboratories include:

- Substituting nonsilica-containing materials for silica-containing materials (e.g., aluminum oxide as an abrasive blasting media instead of silica sand);
- Isolating the source of silica exposure from the dental technician (e.g., perform divestment of castings while materials are immersed in water);
- Removing dust at its point of generation by using engineering controls (e.g., local exhaust ventilation system with dust collection);
- Incorporating work and housekeeping practices that minimize the release of dust into the workroom (e.g., use high-efficiency particulate aerosol-filtered vacuums for clean-up instead of dry sweeping); and
- Using respiratory protection devices (e.g., half-mask air-purifying respirator fitted with type N-100 filters).



Guidance for controlling silica exposure in dental laboratory settings is available at <http://www.osha.gov/SLTC/dentistry/recognition.html> and additional information about silica and silicosis is available at www.cdc.gov/niosh/topics/silica.

References

1. Choudat D. Occupational lung disease among dental technicians. *Tuber Lung Dis* 1994;75:99–104.
2. Rom WN, Lockey JE, Lee JS, et al. Pneumoconiosis and exposures of dental laboratory technicians. *Am J Public Health* 1984;74:1252–7.
3. CDC. Silicosis surveillance---Michigan, New Jersey, Ohio, and Wisconsin, 1987–1990. In: CDC Surveillance Summaries (November 19). *MMWR* 1993;42(No. SS-5).
4. Kim TS, Kim HA, Heo Y, Park Y, Park CY, Roh YM. Level of silica in the respirable dust inhaled by dental technicians with demonstration of respirable symptoms. *Ind Health* 2002;40:260–5.
5. National Institute for Occupational Safety and Health. NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica, 2002. Cincinnati, Ohio: U.S. Department of Health and Human Services, CDC, National Institute for Occupational Safety and Health, 2002; DHHS publication no. (NIOSH)2002-129.

The Importance of Hand Hygiene Technique

Alcohol-based handrub: evaluation of technique and microbiological efficacy with international infection control professionals. Widmer AF, Dangel M. *Infect Control Hosp Epidemiol* 2004;25:207–209.



The recent CDC guideline on hand hygiene promotes the use of alcohol-based handrubs but the technique was not addressed. This study evaluated the influence of technique on the efficacy of alcohol-based handrubs. Sixty trained infection control professionals and hospital epidemiologists with over 10 years experience were tested for their hand-hygiene technique. A fluorescent dye was added to a hand antiseptic, and hands were checked under ultraviolet light after antiseptic cleansing. Results of the visualization test were compared with the data from microbiological samples before and after the procedure by the hand plate technique. Sixty-six percent of all participants still had detectable bacteria after antiseptis. The mean \log_{10} CFU reduction was 2.0 (range, 0–3.85). Twenty-five percent of all health-care workers (HCW) achieved less than 1.1 \log_{10} CFU. *Staphylococcus aureus* was isolated from 13% and gram-negative bacilli from 6.7%. After using the alcohol-based handrub, one subject still remained positive for *S. aureus*. Years of experience was the single most important factor predicting antimicrobial efficacy. Technique is of crucial importance in hand antiseptis. **Major deficiencies were detected among even highly trained HCWs. Training should be provided before switching from handwashing to the alcohol handrub.**

DIS Comment: Studies have shown that rubbing the hands with alcohol is more effective than handwashing with any non-antimicrobial or antimicrobial soap, however hand hygiene technique has not been addressed. The authors state that the large range of reduction factors from 0 to 3.85 \log_{10} CFU provides ample evidence of the need for training when introducing a technique using alcohol-based handrubs for hand antiseptis. Alcohol-based hand rubs may improve hand hygiene compliance and are being promoted for use in medical and dental settings. Also, use of alcohol-based handrub products is less time consuming than handwashing, and products with emollient additives may be less irritating to the hands. As a result, many clinics are in the process of adding alcohol-based hand rubs as a hand-hygiene option. Alcohol-based hand rubs intended for use in health-care settings are available as low viscosity rinses, gels, and foams. As with any product, follow the manufacturer's instructions. This is very important regarding the volume of product to use because the amount may vary for different formulations. When decontaminating hands with an alcohol-based hand rub, apply product to the palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands are dry. In general if hands feel dry after rubbing hands together for 10-15 seconds, an insufficient volume of product likely was

applied. This study emphasizes the importance of appropriate training for HCW before introducing the alcohol-based handrub into their practice.

INFECTION CONTROL PRODUCT EVALUATORS

DIS will be starting several infection control product evaluations in the next month and is looking for dentists in the federal services (e.g., USAF, USA, USN, PHS, VA, USCG) to participate in the clinical-user evaluations. The product will be mailed to interested clinicians along with the questionnaires and a cover letter describing the evaluation process. DIS is primarily interested in whether you liked or disliked the way the product handled and its various features. After using the product for a period of approximately three months, each evaluator completes a questionnaire and returns the questionnaire to DIS. If the item being evaluated is a piece of equipment, it needs to be returned to DIS or the manufacturer. If the item is a material or other type of consumable, it does not. DIS then takes the results and generates a final report for our Web site and the manufacturer. Many of our evaluators have told us they really enjoy being involved in the process. It gives them a chance to use state-of-the-art materials and equipment at no cost to their clinics. They also have said they like having a chance to give their opinions about the new products they are trying.

If you are a **dentist** in the federal services (e.g., USAF, USA, USN, PHS, VA, USCG) and would like to participate in infection control product evaluation please email me at jennifer.harte@ndri.med.navy.mil or call DSN 792-7668.